

ABSTRACT

Systems and method for removing undesirable gas from microfluidic separation devices to prepare them for operation are provided. The microfluidic devices contain separation media that provides a significant fluidic impedance. A vacuum source is used to evacuate gas from, and a positive pressure source is used to introduce liquid into; the microfluidic device to minimize the presence of undesirable bubbles. Where hydrophobic materials are present within the microfluidic device, the liquid may be an organic solvent. Positive pressures of at least about 100 psi are preferably employed. A microfluidic separation device may include multiple separation columns and a distribution network in fluid communication with the columns.